4. Establish a Junior Fire Patrol.

PUBLIC UTILITIES

Water System - The water supply system in Firth consists of two wells with an intake structure and a service pump, a distribution system, and an elevated storage tank. The system has 4809 feet of 2-inch pipes, 5545.9 feet of 4-inch pipes, 1408.3 feet of 6-inch pipes, and 550 feet of 3/4-inch pipes which are all cast iron. There are 14 valves ranging from 2 inches to 6 inches, and 17 fire hydrants. The water storage tank was built in August, 1947, with a capacity of 40,000 gallons.

A water analysis was made by the Nebraska Health Department in February, 1966. The analysis indicates that the quality of water is good and suitable for domestic use without treatment. The analysis also shows that the hardness is above average, and the amount of fluoride is below that recommended to reduce dental cavities.

Table 20

WATER ANALYSIS

Item	Well No. 1
pH	7.5
Total Solids	800
Total Iron	0.0
Manganese	0.0
Floride	0.4
Alkalinity	340
Hardness	480
Calcium	131
Magnesium	37
Nitrate	33.7
Chloride	82
Sulfates	15
Sodium	87
Potassium	5

(All units in milligrams per liter except pH)

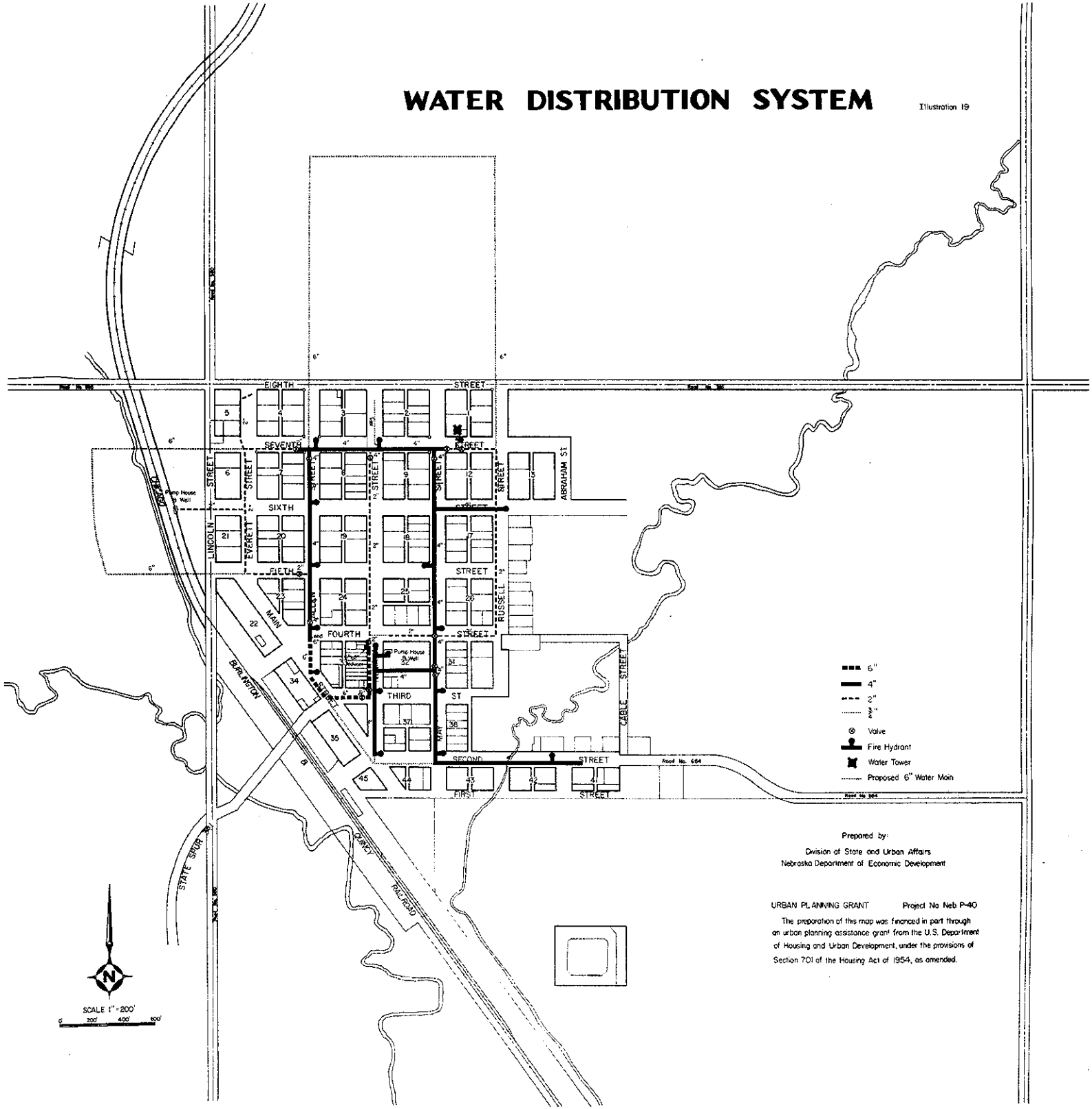
Source: Nebraska Department of Health

The water system is adequate for the present population, but several deficiencies should be corrected:

1. There are two dead ends in the system, one at First and Nemaha, the other at Fourth and Nemaha. Dead ends often cause taste and odor, and accumulate rust which also causes stains and discoloration of clothing, fixtures and plumbing.

WATER DISTRIBUTION SYSTEM

Illustration 19



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Nebraska Department of Economic Development

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2. The present capacity of the water tower is 40,000 gallons. If the average water consumption of 150 gallons per person per day is used, a 50,000 gallon tank is needed today. If the designed population figure of 469 is used, a 70,000 gallon tank will be needed by 1990.

3. Approximately 88 per cent of the water mains are less than 6 inches, and according to modern engineering practice, no water mains should be less than 6 inches since small pipes are inefficient and uneconomical.

Recommendations

1. Eliminate dead ends in the system by closing loops with mains as soon as funds are available.

2. In order to insure a continuation of water supply in the community, at least one of the wells should be fitted with a pulley for emergency use.

3. Provide elevated storage facilities totaling 50,000 gallons by 1970, and 70,000 gallons by 1990.

4. Extend 6-inch water mains into the anticipated growth area to the north and the industrial area west of the Village when they are needed.

5. Add fire hydrants to provide adequate coverage for new areas which will be developed in the near future.

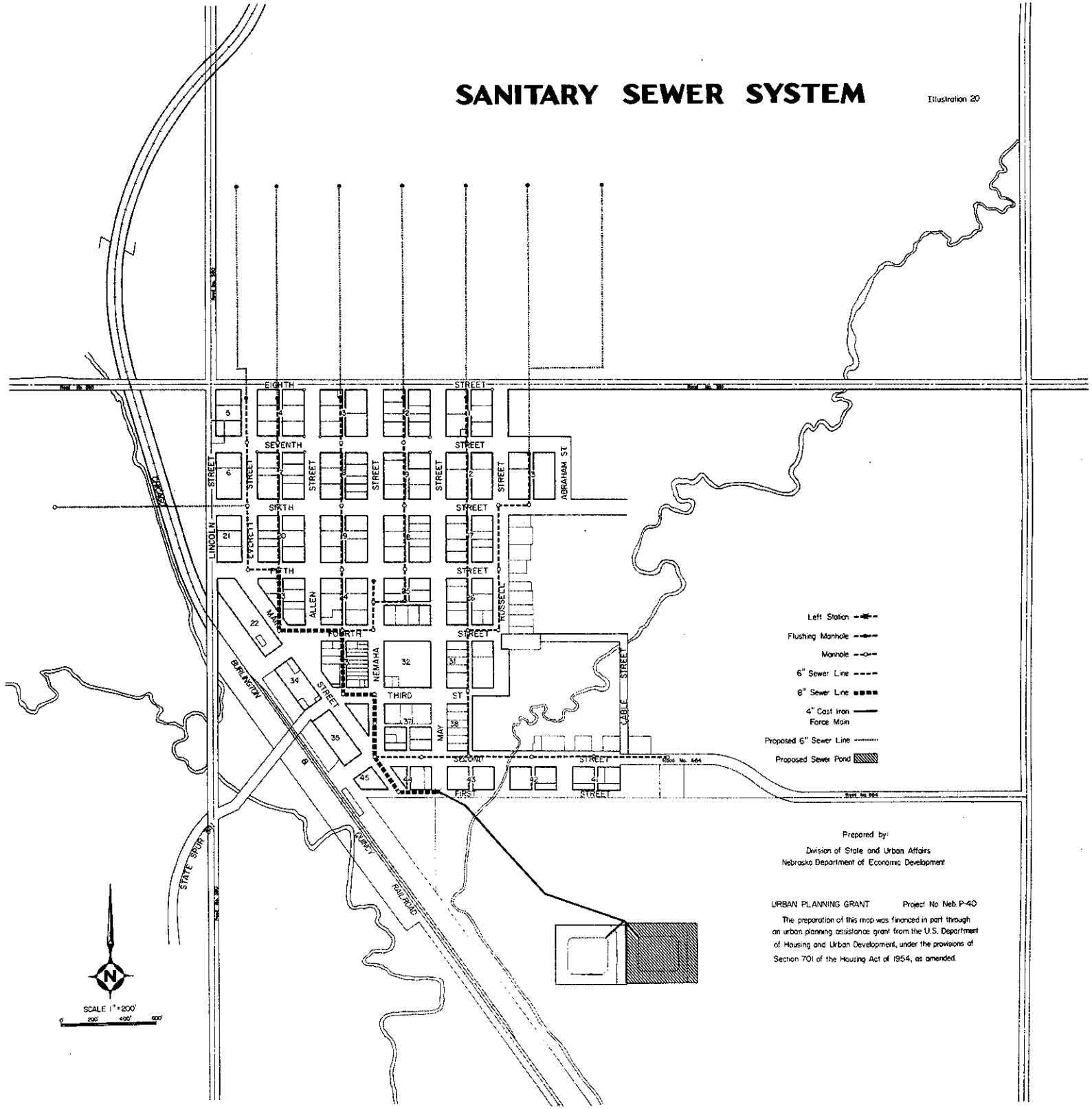
Illustration 19 entitled Water Distribution System shows the existing water distribution facilities and the proposed improvements.

Sanitary Sewer System - The Sanitary Sewer System is composed of 12,100 feet of 6-inch and 1800 feet of 8-inch sewer mains, 7 flushing manholes, 33 manholes, a lift station, 1300 feet of forced main, and a sewer lagoon. All the system utilizes gravity flow for transmission except at the southern part of the Village where a lift station is used to pump the sewage into the lagoon. The development within the corporate limits is at present adequately served by the system, but the sewer lagoon is at its full capacity. It is recommended that the present lagoon be expanded and that the anticipated growth area be properly installed with sewer mains.

Illustration 20 entitled Sanitary Sewer System shows the size and location of the sewer main, and the proposed improvements.

SANITARY SEWER SYSTEM

Illustration 20



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Solid Waste Disposal - The Village has a sanitary land fill located northwest of the corporate limits which is quite adequate for the Planning Period. The Nebraska Health Department recommends that each city and village within the State should have a properly designed sanitary landfill site or an incinerator, which may be owned by the municipality or a private individual, or which may be used or operated in cooperation with another municipality or a county. The disposal site shall be properly supervised so that dumping will be controlled, filling and burial in a landfill operation will be done promptly and efficiently, and refuse will not be scattered over the site or onto adjacent property.

An access road within the disposal site shall be of all-weather construction. Reasonable measures shall be taken to control insects and rodents at the site. It is recommended that the existing sanitary land fill be conformed to the criteria suggested by the State Health Department.

Storm Drainage System - The Village has a very limited storm drainage system to provide for surface water runoff. The system consists of only open ditches which run from north to south along Nemaha Street. Because of large lots and the rural character of the Village, storm water run-off is not a big problem. As new neighborhoods are developed, it is imperative that drainage be carefully considered when new subdivisions are added to the Village. Subdivisions should not be approved in areas that cannot be properly drained and that are not free from flooding. The existing system is shown on Illustration 21 entitled Storm Drainage System.

Electrical Power - The electrical power in the Village is supplied by Consumers Public Power District with district office located at Beatrice. The district manager reported that the kilowatt hours sold during the past five years have increased 38 per cent. The following are the kilowatt hour figures sold to the people of Firth.

Table 21

ELECTRICITY CONSUMPTION

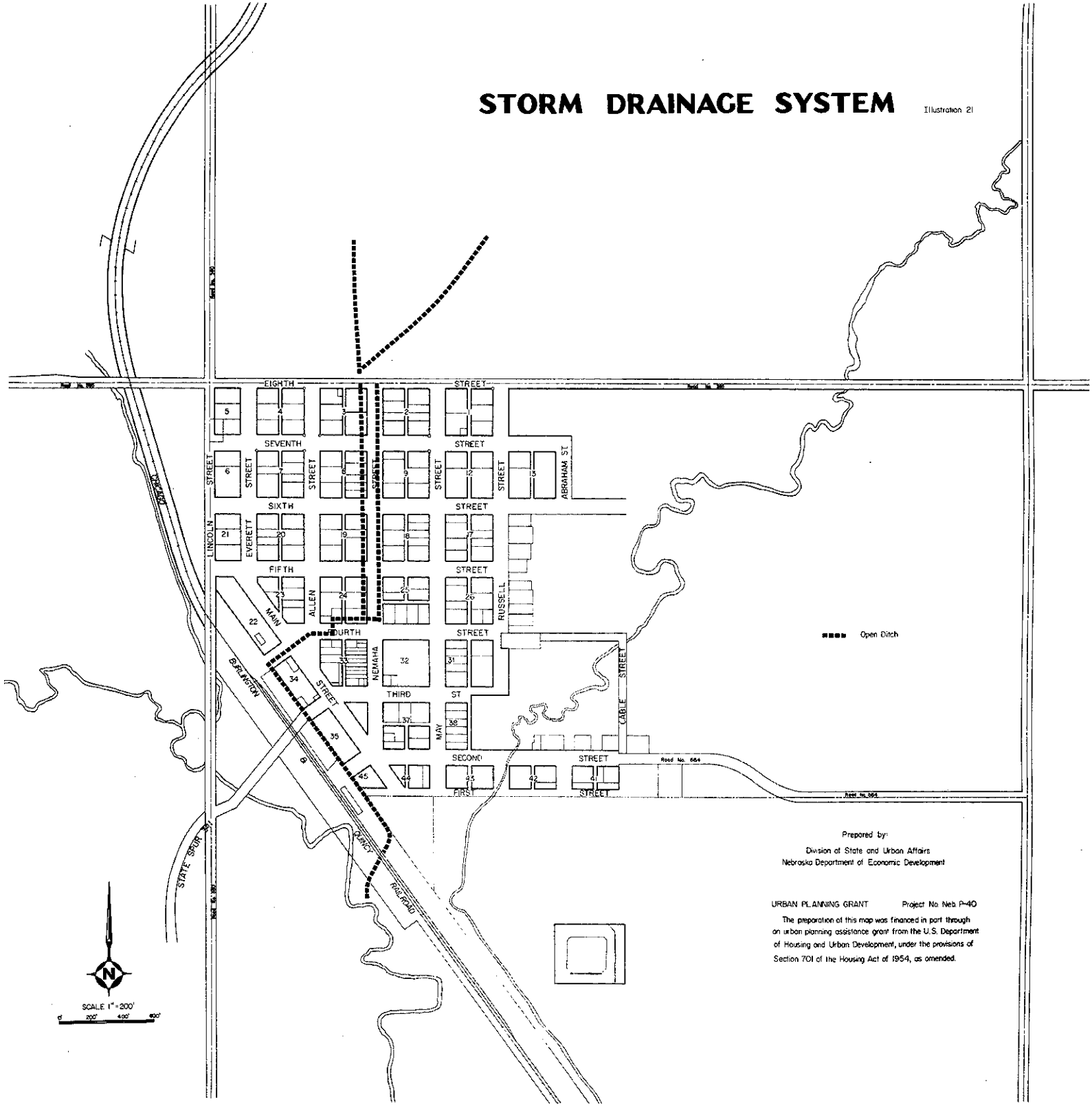
Year	Consumption
1963	856,048 KWH
1964	932,628 KWH
1965	989,250 KWH
1966	1,133,499 KWH
1967	1,184,692 KWH

Source: Consumers Public Power District, District Office, Beatrice, Nebraska.

Other Utilities - Anticipated community growth and development will require continual enlargement and modification of electric power, telephone, and gas system. The comprehensive development plan will be a useful guide for the private utilities companies to plan for the needs in Firth.

STORM DRAINAGE SYSTEM

Illustration 21



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